

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q62301

Hironori KIKKAWA

Appln. No.: 09/735,907

Group Art Unit: 2871

Confirmation No.: 5747

Examiner: Prasad R. AKKAPEDDI

Filed: December 14, 2000

For: LIQUID CRYSTAL DISPLAY DEVICE

STATEMENT UNDER 37 C.F.R. § 1.97(e)

Commissioner for Patents
Washington, D.C. 20231

Sir:

The undersigned hereby states, upon information and belief:

That each item of information contained in the Information Disclosure Statement filed concurrently herewith was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of said Information Disclosure Statement.

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WASHINGTON OFFICE




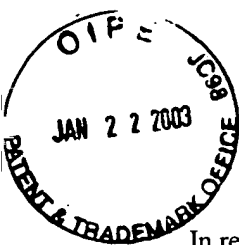
23373

PATENT TRADEMARK OFFICE

Date: January 22, 2003

Respectfully submitted,


Howard L. Bernstein
Registration No. 25,665 for
J. Frank Osha
Registration No. 24,625



2871

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In re application of

Hironori KIKKAWA

Appln. No.: 09/735,907

Confirmation No.: 5747

Filed: December 14, 2000

For: LIQUID CRYSTAL DISPLAY DEVICE

Docket No: Q62301

Allowed: November 5, 2002

Group Art Unit: 2871

Examiner: Prasad R. AKKAPEDDI

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. §§ 1.97 and 1.98

Commissioner for Patents
Washington, D.C. 20231

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and/or listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

One copy of each of the listed documents is submitted herewith.

1. Japanese Unexamined Utility Model Application Publication No. 4-120935, published October 29, 1992.
2. Japanese Unexamined Patent Application Publication No. 8-32845, published February 2, 1996.
3. Japanese Unexamined Patent Application Publication No. 9-179123, published July 11, 1997.
4. Japanese Unexamined Patent Application Publication No. 63-104026, published May 9, 1988.

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Hironori KIKKAWA
09/735,907
INFORMATION DISCLOSURE STATEMENT

The present Information Disclosure Statement is being filed after either a Final Office Action, Notice of Allowance, or an action that otherwise closes prosecution in the application (whichever is earlier), but before payment of the Issue Fee, and therefore Applicant is submitting herewith a check for the fee of \$180.00 under 37 C.F.R. § 1.17(p), and a Statement Under 37 C.F.R. § 1.97(e). The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

In compliance with the concise explanation requirement under 37 C.F.R. § 1.98(a)(3) for foreign language documents, Applicant encloses herewith a copy of a Japanese Office Action dated November 26, 2002 and an English translation of the pertinent portions thereof, which cites and indicates the degree of relevance found by the foreign patent office.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

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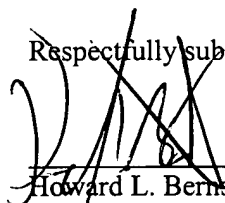


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Remarks

Regarding Claims 1 through 3

An OCB (optically compensated bend)-type liquid crystal display device is described in Cited Literature 1 (Japanese Unexamined Patent Application Publication H10-142638) (particularly, {0036} through {0044} and Figures 4 through 7), which is cited in the previous Notification of Reasons for Rejection.

The Applicant asserts in its Written Argument: "For this reason, to the extent that a perpendicular component is generated in the parasitic electrical field produced by the signal line and pixel electrode formed on differing layers, there is a defect that the liquid crystal is more susceptible to twisted orientation than in the case of a horizontal component only. Moreover, there is neither any indication nor any suggestion in Cited Literature 1 of the technical concept of stabilizing the orientation of the liquid crystal molecules by actively using the parasitic electrical field produced by the signal line and pixel electrode, as described in the subject application."

Nevertheless, the Specifications of the subject application (Example of Embodiment 1, {0031}) state: "In addition, a potential difference is created between the signal line 31 and pixel electrode 41, and an originally unintended parasitic electrical field is generated. Since the signal line 31 and pixel electrode 41 are arranged horizontally within the same layer, the electrical field Ef2 is a horizontal electric field, and the direction of the force lines thereof coincides with the short-side axis A-A' direction, i.e., the orientation direction Or of the liquid crystal molecules. Accordingly, this horizontal electrical field Ef2 causes transition of the liquid crystal molecules to a twist type in priority over transition to a bend type impression mode. Thus, by making the orientation direction Or of the opposing substrates the short-side axis A-A' direction, the effects of the horizontal electrical field on the liquid crystal molecules can be avoided." Accordingly, the invention of the subject application establishes a direction of orientation for eliminating the effects of the parasitic electrical field produced by the signal line and pixel electrode, and does not stabilize the orientation of the liquid crystal molecules by actively using the parasitic electrical field produced by the signal line and electrodes.

The Specifications of the subject application (Example of Embodiment 2, {0036}), also state: "In this color liquid crystal display device, as shown schematically in Fig. 5, since the pixel electrode 41 is formed in a layer closer to the common electrode 14 than the signal line 31, even if a potential difference is created between the signal line 31 and pixel electrode 41, generating an electric field Ef2, the force lines thereof are directed downward and have hardly any effect on the force lines of the electrical field Ef1 formed between the pixel electrode 41 and common electrode 14." Accordingly, to

the extent that a perpendicular component is generated in the parasitic electrical field produced by the signal line and pixel electrode formed in differing layers, the liquid crystal becomes less susceptible, rather than more susceptible, to twisted orientation than in the case of a horizontal component only.

On this basis, the foregoing assertions cannot be accepted.

Here, even without citing examples, it is clear that an active matrix type liquid crystal display device in which "the signal line is in the same layer as the pixel electrode," as described in the invention according to Claim 1 of the subject application, "the pixel electrode is formed in a layer closer to the common electrode than the scanning line," as described in the invention according to Claim 2 of the subject application, and "the side portions of the pixel electrode and the side portions of the scanning line at least partially overlap with an insulation layer interposed," is known technology.

Accordingly, the constitution of the inventions according to Claims 1 through 3 of the subject application could have been easily conceived by person skilled in the art based on the invention described in Cited Literature 1 and the aforementioned known technology.

Regarding Claims 4 through 7 and 9

An OCB-type liquid crystal display device is described in Cited Literature 1 (Japanese Unexamined Patent Application Publication H10-142638), which is cited in the previous Notification of Reasons for Rejection.

A liquid crystal display device wherein an auxiliary electrode that can generate an electric field is provided between the pixel electrode and signal line is described in Cited Literature 2 (Japanese Unexamined Patent Application Publication H4-349430), Cited Literature 3 (Japanese Unexamined Patent Application Publication H5-66420) and Cited Literature 4 (microfilm of Japanese Utility Model Application H3-25501 (Japanese Unexamined Utility Model Application Publication H4-120935)).

In the Written Argument, the Applicant asserts that: "The problem of the parasitic electrical field leaking to a large extent into the liquid crystal area and making bend orientation difficult is not recognized in Cited Literature 1. Since this problem is not recognized, there is no necessity to combine Cited Literature 1 with Cited Literature 2 through 4."

Nevertheless, Cited Literature 1 (in particular, {0046}) states that bend orientation becomes easier due to the weakening of the lateral electrical field generated between the source wiring and the pixel electrode. Moreover, in the OCB-type liquid crystal display device, the fact that orientation defects are produced due to the electrical field generated between the pixel electrode and signal line is a generally known problem (see Japanese Unexamined Patent Application Publication H8-32845 (in particular, {0024}, Fig. 3) and Japanese Unexamined Patent Application Publication H9-179123 (in particular,

{0013}, Fig. 20)). Thus, no special creativity or ingenuity is required to combine Cited Literature 2 through 4 with Cited Literature 1.

Refer to Cited Literature 2 (in particular, Fig. 2) with respect to the invention according to Claim 4 of the subject application.

Refer to Cited Literature 3 with respect to the inventions according to Claims 5 and 6 of the subject application.

Refer to Cited Literature 4 (in particular, {0020}) with respect to the invention according to Claim 7 of the subject application.

Accordingly, the constitution of the inventions according to Claims 4 through 7 and 9 of the subject application could have been easily conceived by a person skilled in the art based on the inventions described in Cited Literature 1 through 4.

Regarding Claims 8 and 9

An OCB-type liquid crystal display device in which a transparent dielectric film 16 is provided is described in Cited Literature 1 (Japanese Unexamined Patent Application Publication H10-142638) (in particular, {0045} through {0050}, Figs. 8 and 9), which was cited in the previous Notification of Reasons for Rejection. Here, it can be determined from Fig. 9 that the transparent dielectric film is a planarized film.

The Applicant asserts in the Written Argument that: "Although transparent electrode layer 16 in Fig. 9 of Cited Literature 1 appears to be planarized, in a normal inorganic transparent dielectric layer, there is no capacity to smooth the roughness (about 2,000 to 10,000 Å) on the active matrix substrate.

However, no statement can be found to indicate that the "transparent dielectric film" described in Cited Literature 1 is an inorganic film. Even if the "transparent dielectric film" described in Cited Literature 1 were an inorganic film, the fact that an inorganic film is used as the planarized film provided on the active matrix substrate is publicly known technology (see, for example, Japanese Unexamined Patent Application Publication S63-104026).

Accordingly, the constitution of the inventions according to Claims 8 and 9 of the subject application could have been easily conceived by person skilled in the art based on the invention described in Cited Literature 1 and the aforesaid publicly known technology.